FACT SHEET FOR NPDES PERMIT WA-002990-4
WARM BEACH WASTEWATER TREATMENT PLANT

SUMMARY

The Warm Beach Christian Camps and Conference Center is located on a bluff north of the unincorporated community of Warm Beach, overlooking Port Susan Bay, in Snohomish County. The camp was developed in the late 1950's and offers accommodation to public and school groups seeking a retreat and conference/recreation site.

The existing wastewater treatment facility at the camp consists of biological treatment in two aerated lagoon cells followed by free-water-surface-type wetlands. The free-water-surface-type wetlands treatment system consisting of two wetlands cells was added to the treatment facility in August 2003. The secondary treated effluent from the wetlands is disinfected prior to discharging it to an unnamed stream tributary to Port Susan.

The camp has applied for renewal of its NPDES Permit to continue to discharge secondary treated wastewater to the unnamed stream tributary to Port Susan. Due to the water quality concerns in the receiving water, and human contact concerns downstream of the discharge, the proposed permit requires the Permittee to relocate the discharge outfall by September 30, 2006.

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INTRODUCTION

The Federal Clean Water Act (FCWA, 1972, and later modifications, 1977, 1981, and 1987) established water quality goals for the navigable (surface) waters of the United States. One of the mechanisms for achieving the goals of the Clean Water Act is the National Pollutant Discharge Elimination System of permits (NPDES permits), which is administered by the Environmental Protection Agency (EPA). The EPA has delegated responsibility to administer the NPDES permit program to the state of Washington on the basis of Chapter 90.48 RCW which defines the Department of Ecology's authority and obligations in administering the wastewater discharge permit program.

The regulations adopted by the state include procedures for issuing permits (Chapter 173-220 WAC), technical criteria for discharges from municipal wastewater treatment facilities (Chapter 173-221 WAC), water quality criteria for surface and ground waters (Chapters 173-201A and 200 WAC), and sediment management standards (Chapter 173-204 WAC). These regulations require that a permit be issued before discharge of wastewater to waters of the state is allowed. The regulations also establish the basis for effluent limitations and other requirements which are to be included in the permit. One of the requirements (WAC 173-220-060) for issuing a permit under the NPDES permit program is the preparation of a draft permit and an accompanying fact sheet. Public notice of the availability of the draft permit is required at least thirty (30) days before the permit is issued (WAC 173-220-050). The fact sheet and draft permit are available for review (see Appendix A--Public Involvement of the fact sheet for more detail on the public notice procedures).

The fact sheet and draft permit have been reviewed by the Permittee. Errors and omissions identified in this review have been corrected before going to public notice. After the public comment period has closed, the Department will summarize the substantive comments and the response to each comment. The summary and response to comments will become part of the file on the permit and parties submitting comments will receive a copy of the Department's response. The fact sheet will not be revised. Comments and the resultant changes to the permit will be summarized in Appendix D--Response to Comments.

GENERAL INFORMATION	
Applicant	Warm Beach Christian Camps and Conference Center
Facility Name and Address	Warm Beach WWTP 20800 Marine Drive Stanwood, WA 98292
Type of Treatment	Aerated Stabilization Ponds and Wetlands
Discharge Location	Stream Tributary to Port Susan Latitude: 48° 11' 19" N Longitude: 122° 21' 00" W
Waterbody ID Number	WA-PS-0020

BACKGROUND INFORMATION

DESCRIPTION OF THE FACILITY

HISTORY

The Warm Beach Christian Camps and Conference Center is located on a bluff north of the unincorporated community of Warm Beach, overlooking Port Susan Bay, in Snohomish County.

The camp was developed in the late 1950's and offers accommodation to public and school groups seeking a retreat and conference/recreation site. The camp provides camping/RV facilities as well as cabins and youth camp bungalows to the visitors. A swimming pool, horseback rides, miniature golf facilities, and other recreational facilities are offered by the camp. The camp maintains some cabins for the facility staff. A senior community southwest of the camp and conference center includes mobile home park site, assisted living units, a health care center, and multiplex apartments. The camp and the senior community do not share any utilities with the unincorporated community of Warm Beach.

The one-acre stabilization lagoon for wastewater treatment, as well as the sewer collection for the camp was constructed in the early 1960's when the center was first being developed. In 1974, a mechanical floating aerator was added to improve the efficiency of the lagoon. A chlorine contact chamber with chlorine feed facility was added at this time for disinfection of lagoon effluent. In 1995, a curtain was installed along the lagoon periphery to prevent short-circuiting from inlet to the outlet structure of the lagoon. In 1997, to further improve the treatment system's reliability in meeting the effluent limits, the lagoon was divided into two separate cells with a mechanical surface aerator in each cell. In addition, a submersible pump was installed near the outlet to return settled sludge back to the first cell. The curtain arrangement was also modified so that only a portion of the periphery near the lagoon outlet is separated by the curtain. Most recent (August 2003) modifications to the treatment facility include addition of free-water-surface-type wetlands treatment system consisting of two wetlands cells downstream of the aerated lagoons. This addition to the treatment facility was implemented to improve reliability of the treatment system and quality of the effluent, and to increase the facility's treatment capacity. The effluent is now chlorinated with calcium hypochlorite, and dechlorinated with sodium sulfite.

WASTEWATER SOURCES

Wastewater tributary to the treatment facility consists of domestic sewage from various lodging and boarding facilities at the campsite, and from the senior community.

WASTEWATER CHARACTERISTICS

Waste water received at the facility is typical domestic wastewater with conventional pollutants.

DESCRIPTION OF THE WASTEWATER TREATMENT FACILITY

The wastewater treatment at the facility includes a fine screen, a Parshall flume for influent flow measurement, biological treatment in two aerated lagoon cells followed by two wetlands cells, disinfection with calcium hypochlorite, dechlorination with sodium sulfite, and a V-notch weir for effluent flow measurement.

Secondary treated and disinfected effluent is discharged from the facility via a 6-inch outfall pipe into an unnamed stream tributary to Port Susan. The receiving stream drains to an impoundment inside the Port Susan dike several hundred feet downstream of the discharge point. A second stream that receives runoff from the surrounding agricultural area also discharges to this impoundment. Waste water from the impoundment drains by gravity to Port Susan tidal flats at low tide. The waste water is pumped into Port Susan at high tide.

Due to water quality concerns in the receiving stream, and human contact concerns downstream of the discharge, the proposed permit requires the outfall to be relocated by September 30, 2006.

RESIDUAL SOLIDS

The treatment facility removes solids during the treatment of the waste water at the headworks (screenings), and in the lagoon and wetlands cells, in addition to incidental solids (rags, scum, and other debris) removed as part of the routine maintenance of the equipment. Screenings, rags, and scum are disposed of as solid waste at the local landfill. Sludge (biosolids) generated during the wastewater treatment is stored in the lagoon cells for stabilization, as it is normally done in processes involving lagoon treatment. When the stored sludge in the lagoon cells begins interfering with the wastewater treatment, it is removed from the system, and utilized or disposed of in accordance with the local health department regulations.

PERMIT STATUS

The existing permit for this facility was issued on July 23, 1998. The permit expired on June 30, 2003. An application for permit renewal was submitted to the Department on December 31, 2002, and accepted by the Department on March 7, 2003. Due to administrative backlog, the existing permit was extended by the Department on June 18, 2003. The facility is currently operating under the terms and conditions of this permit.

SUMMARY OF INSPECTIONS

A Class II inspection of the facility was conducted on October 28, 2003, by the Department's Northwest Regional Office (NWRO) staff. BOD and TSS in the 24-hour composite samples collected during the inspection were well below the permitted monthly and weekly average effluent limits. Ammonia and fecal coliform bacteria concentrations were also well below the permit limits. Effluent looked clear at the time of inspection. The inspection reports are on file at the Northwest Regional Office of the Department.

EXISTING EFFLUENT LIMITS

The existing permit placed effluent limitations on flow, 5-day Biochemical Oxygen Demand (BOD_5), Total Suspended Solids (TSS), and pH. The permit also placed interim and final effluent limitations on fecal coliform bacteria and chlorine, and final effluent limitations on ammonia and dissolved oxygen (DO).

The final effluent limitations, which became effective May 1, 2003, are as follows:

FINAL EFFLUENT LIMITATIONS: OUTFALL # 1		
Parameter	**Average Monthly**	**Average Weekly**
Flow	0.075 MGD	----------
Biochemical Oxygen Demand (5-day) (BOD_5)	30 mg/L, 19 lbs/day	45 mg/L, 29 lbs/day
Total Suspended Solids (TSS)	75 mg/L, 47 lbs/day	112 mg/L, 70 lbs/day
pH	Daily minimum is equal to or greater than 6 and the daily maximum is less than or equal to 9.	
Parameter	**Average Monthly**	**Maximum Daily**
Fecal Coliform Bacteria	100/100 mL	No more than 10% of samples to exceed 200/100 Ml
Total Residual Chlorine	8 µg/L	19 µg/L
Total Ammonia (NH3-N)	1.8 mg/L	3.5 mg/L
Parameter	**Average Monthly**	**Minimum Daily**
Dissolved Oxygen (DO)	---------	8.0 mg/L

SUMMARY OF COMPLIANCE WITH THE EXISTING EFFLUENT LIMITS

The final effluent limitations for the facility became effective May 1, 2003. The following table summarizes the compliance record based on the monitoring reports submitted to the Department for the months May 2003 through February 2005.

Facility's Compliance Record from May 2003 through August 2005

Parameter	Compliance Record
Influent Flow:	Facility operated within the permit limit through this period.
Effluent BOD5: Average Monthly Limit: Average Weekly Limit: % removal:	 Two minor violations of 30 mg/l limit during this period. One minor violation of 45 mg/l limit during this period. No violation of 85% removal limit during this period.
Effluent TSS: Average Monthly Limit: Average Weekly Limit:	 No violation of 75 mg/l limit during this period. No violation of 112 mg/l limit during this period.
pH:	Facility operated within the permit limits through this period.
Fecal Coliform Bacteria: Average Monthly Limit: Maximum Daily Limit:	 One violation of the monthly limit during this period. Two violations of the daily limit during this period.
Total Residual Chlorine: Average Monthly Limit: Maximum Daily Limit:	 No violation of 8 µg/l limit during this period. One violation of 19 µg/l limit during this period (questionable due to test interference)
Total Ammonia: Average Monthly Limit: Maximum Daily Limit:	 Three violations of 1.8 mg/l limit during this period. Four violations of 3.5 mg/l limit during this period.
Dissolved Oxygen (DO): Minimum Daily Limit:	 One violation of 8 mg/l limit during this period

The Permittee had submitted an engineering report to the Department in October 1998, for facility expansion and upgrade to comply with the stringent final effluent limitations which became effective May 1, 2003. Addition of the wetlands treatment system alternative was the preferred alternative for the facility upgrade and expansion. Construction of the wetlands treatment system was delayed due to the delays in obtaining permits from various government agencies. The wetlands treatment system became operational in August 2003.

The facility staff had difficulties keeping the effluent in compliance with the permit limits for BOD_5 and TSS prior to the facility upgrade. There were frequent violations of the BOD_5 and TSS limits with the aerated lagoon treatment system. Since the facility upgrade in August 2003, there has been no violation of the TSS limits. There were three minor violations of the BOD_5 limits—two violations of the monthly limit and one violation of the weekly limit. The violation of the weekly limit resulted in one of the two violations of the monthly limit. Since May 1, 2003, effluent limits for fecal coliform bacteria and chlorine have been more stringent, and effluent limits have been

placed on additional parameters – ammonia and DO. There were three violations of the fecal coliform limits, one violation of the chlorine limit, seven violations of the ammonia limits, and one violation of the DO limit. Two of the three violations of the fecal coliform limits (one daily and one monthly) occurred during the same month. The chorine limit violation is questionable due to interference of some compounds with chemicals in the test method. Three violations of the monthly limit for ammonia resulted from three of the four violations of the daily limit. The violations of the ammonia limitations may have been due, either to the wetland plants not being fully mature, or to the poor performance of the wetlands treatment system during the cold weather months.

PROPOSED PERMIT LIMITATIONS

Federal and State regulations require that effluent limitations set forth in an NPDES permit must be either technology- or water quality-based. Technology-based limitations for municipal discharges are set by regulation (40 CFR 133, and Chapters 173-220 and 173-221 WAC). Water quality-based limitations are based upon compliance with the surface water quality standards (Chapter 173-201A WAC), ground water standards (Chapter 173-200 WAC), sediment quality standards (Chapter 173-204 WAC) or the National Toxics Rule (Federal Register, Volume 57, No. 246, Tuesday, December 22, 1992.) The most stringent of these types of limits must be chosen for each of the parameters of concern. Each of these types of limits is described in more detail below.

The limits in this permit are based in part on information received in the application. The effluent constituents in the application were evaluated on a technology- and water quality-basis. The limits necessary to meet the rules and regulations of the State of Washington were determined and included in this permit. Ecology does not develop effluent limits for all pollutants that may be reported on the application as present in the effluent**.** Some pollutants are not treatable at the concentrations reported, are not controllable at the source, are not listed in regulation, and do not have a reasonable potential to cause a water quality violation**.** Effluent limits are not always developed for pollutants that may be in the discharge but not reported as present in the application. In those circumstances the permit does not authorize discharge of the non-reported pollutants. Effluent discharge conditions may change from the conditions reported in the permit application. If significant changes occur in any constituent, as described in 40 CFR 122.42(a), the Permittee is required to notify the Department of Ecology. The Permittee may be in violation of the permit until the permit is modified to reflect additional discharge of pollutants.

DESIGN CRITERIA

In accordance with WAC 173-220-150 (1)(g), flows or waste loadings shall not exceed approved design criteria.

The only design criterion for the aerated lagoon treatment facility is the maximum month average flow of 75,000 gallons per day. The approved design capacity for the facility, even with the addition of the wetlands treatment system, will remain same until the outfall relocation.

Design Standards for Warm Beach WWTP prior to Outfall Relocation

Parameter	Design Quantity
Maximum Month Average Flow	75,000 gallons per day (gpd)

The design criteria for the upgraded and expanded treatment facility (aerated lagoon followed by wetlands) are taken from *Warm Beach Christian Camps and Conference Center Wastewater Treatment Plant Upgrade and Expansion* P*lans and Specifications, H. R. Esvelt Engineering, April 17, 2002*. The design criteria for the upgraded and expanded facility, which become effective after the outfall relocation, are as follows:

Design Standards for Warm Beach WWTP effective after Outfall Relocation

Parameter	Design Quantity
Maximum Month Average Flow	150,000 gallons per day (gpd)
Maximum Month Average Influent BOD_5 Loading	380 pounds per day (lbs/day)

TECHNOLOGY-BASED EFFLUENT LIMITATIONS

Municipal wastewater treatment plants are a category of discharger for which technology-based effluent limits have been promulgated by federal and state regulations. These effluent limitations are given in the Code of Federal Regulations (CFR) 40 CFR Part 133 (federal) and in Chapter 173-221 WAC (state). These regulations are performance standards that constitute all known available and reasonable methods of prevention, control, and treatment for municipal wastewater.

The technology-based limits for the existing treatment facility for pH, BOD_5, and TSS taken from Chapter 173-221 WAC are as follows:

Technology-based Limits for the Existing Treatment Facility

Parameter	Limit
pH	Shall be within the range of 6 to 9 standard units
BOD_5 (concentration)	Average Monthly Limit is the most stringent of the following: - 30 mg/L - may not exceed fifteen percent (15%) of the average influent concentration Average Weekly Limit = 45 mg/L
TSS (concentration)	Average Monthly Limit = 75 mg/L Average Weekly Limit = 112 mg/L (see note below)

Note: The wetlands treatment technology is similar to the waste stabilization ponds treatment technology in that they are both simple forms of wastewater treatment with no mechanical equipment involved, except for mechanical aeration equipment in some waste stabilization ponds. They both treat wastewater by means of natural degradation processes involving aquatic plants and microorganisms. They rely on sunlight as a source of energy. Ambient temperature and the presence of sunlight play important roles in wastewater treatment by these technologies. Unfortunately, because of the large surface area and long hydraulic retention times in both these treatment systems, they are subject to algal growth, resulting in much higher effluent TSS concentrations compared to TSS concentrations in effluents from conventional mechanical wastewater treatment systems.

WAC 173-221-050 (2) allows alternative (higher) discharge standards for TSS for waste stabilization ponds because of the presence of algae in the effluent. The regulation does not address TSS in effluents from wetlands treatment systems. Since the wetlands treatment systems effluent is subject to high TSS concentrations from algal growth like the waste stabilization ponds effluent, the alternative (waste stabilization ponds) discharge standards would also be applicable to the wetlands treatment systems effluent. Based on the monitoring data submitted by the Permittee for the months of May 2003 through February 2005, the facility's wetlands treatment system effluent TSS concentrations ranged from 6 mg/L to 66 mg/L (monthly average) and from 7 mg/L to 67 mg/L (weekly average). It is apparent that, due to algal growth, the wetlands treatment system at the facility cannot consistently produce effluent TSS below the conventional secondary treatment limits of 30 mg/L (monthly average), and 45 mg/L (weekly average). Therefore, alternative effluent TSS limits based on waste stabilization ponds discharge standards are proposed in this permit. Section 3.3.2 of Chapter V (Municipal Effluent Limitations and Other Requirements) of Ecology's *Permit Writer's Manual* describes the process for determining alternative BOD_5/TSS limits for Waste Stabilization Ponds. Since the wetlands treatment system at the facility is new, the alternative TSS standards in the proposed permit, derived from Subsection 1 of Section 3.3.2, are 75 mg/L monthly average and 112 mg/L weekly average.

WAC 173-221-050 (2) also allows alternative (higher) discharge standards for BOD for waste stabilization ponds. Again, the regulation does not address BOD in effluents from wetlands treatment systems. Based on the monitoring data submitted by the Permittee for the months of May 2003 through February 2005, the facility effluent BOD concentrations ranged from 4.7 mg/L to 33.5 mg/L (monthly average) and from 4.9 mg/L to 47 mg/L (weekly average). It appears that the Permittee may have difficulties complying with the conventional secondary treatment limits of 30 mg/L (monthly average), and 45 mg/L (weekly average) during the cold weather months. However, these are the BOD limits in the existing permit, and raising these limits in the renewed permit cannot be allowed as specified in 40 CFR 122.44 (l)(1) (anti-backsliding rule). In addition, monitoring conducted by the Department staff during the Stillaguamish River TMDL study indicates that the DO in the receiving water body (unnamed stream/Warm Beach Creek into which the Warm Beach WWTP discharges) fails to comply with the water quality standards during low flow periods. The TMDL study identifies the receiving waterbody as Warm Beach Creek, and the DO measurements in the stream, from June 2001 through October 2001, ranged from 3.85 mg/L to 6.38 mg/L. Additional BOD from the Warm Beach WWTP may exacerbate the low DO problems in the stream. Therefore, the BOD limits in the proposed permit are 30 mg/L (monthly average), and 45 mg/L (weekly average), instead of the alternative higher limits allowed by WAC 173-221-050 (2).

The following technology-based mass limits are based on WAC 173-220-130(3)(b) and 173-221-030(11)(b).

Monthly average effluent mass loading (lbs/day) limit for BOD_5 was calculated as maximum monthly design flow (0.075 MGD) x concentration limit (30 mg/L) x conversion factor (8.34) = 19 lbs/day.

Weekly average effluent mass loading (lbs/day) limit for BOD_5 was calculated as 1.5 x monthly loading = 29 lbs/day.

Monthly average effluent mass loading (lbs/day) limit for TSS was calculated as maximum monthly design flow (0.075 MGD) x concentration limit (75 mg/L) x conversion factor (8.34) = 47 lbs/day.

Weekly average effluent mass loading (lbs/day) limit for TSS was calculated as maximum monthly design flow (0.075 MGD) x concentration limit (112 mg/L) x conversion factor (8.34) = 70 lbs/day.

SURFACE WATER QUALITY-BASED EFFLUENT LIMITATIONS

In order to protect existing water quality and preserve the designated beneficial uses of Washington's surface waters, WAC 173-201A-060 states that waste discharge permits shall be conditioned such that the discharge will meet established surface water quality standards. The Washington State surface water quality standards (Chapter 173-201A WAC) is a state regulation designed to protect the beneficial uses of the surface waters of the state. Water quality-based effluent limitations may be based on an individual waste load allocation (WLA) or on a WLA developed during a basin-wide total maximum daily load study (TMDL).

NUMERICAL CRITERIA FOR THE PROTECTION OF AQUATIC LIFE

"Numerical" water quality criteria are numerical values set forth in the state of Washington's water quality standards for surface waters (Chapter 173-201A WAC). They specify the levels of pollutants allowed in receiving water while remaining protective of aquatic life. Numerical criteria set forth in the water quality standards are used along with chemical and physical data for the wastewater and receiving water to derive the effluent limits in the discharge permit. When surface water quality-based limits are more stringent or potentially more stringent than technology-based limitations, they must be used in a permit.

NUMERICAL CRITERIA FOR THE PROTECTION OF HUMAN HEALTH

The state was issued 91 numeric water quality criteria for the protection of human health by the U.S. EPA (EPA 1992). These criteria are designed to protect humans from cancer and other disease and are primarily applicable to fish and shellfish consumption and drinking water from surface waters.

NARRATIVE CRITERIA

In addition to numerical criteria, "narrative" water quality criteria (WAC 173-201A-030) limit toxic, radioactive, or deleterious material concentrations below those which have the potential to adversely affect characteristic water uses, cause acute or chronic toxicity to biota, impair aesthetic values, or adversely affect human health. Narrative criteria protect the specific beneficial uses of all fresh (WAC 173-201A-130) and marine (WAC 173-201A-140) waters in the state of Washington.

ANTIDEGRADATION

The state of Washington's Antidegradation Policy requires that discharges into a receiving water body shall not further degrade the existing water quality of the water body. In cases where the natural conditions of a receiving water body are of lower quality than the criteria assigned, the natural conditions shall constitute the water quality criteria. Similarly, when the natural conditions of a receiving water body are of higher quality than the criteria assigned, the natural conditions shall constitute the water quality criteria. More information on the Washington State Antidegradation Policy can be obtained by referring to WAC 173-201A-070.

As part of the Stillaguamish River TMDL study, the Department staff conducted water quality monitoring in Warm Beach Creek, the receiving waterbody for the facility's discharge. The dissolved oxygen (DO) measurements in Warm Beach Creek during May 2001 through October 2001 were below the minimum (of 8 mg/L) required under the water quality standards for Class "A" Fresh Waters. However, the Department staff has not conducted a detailed analysis to check if the ambient water quality is either higher or lower than the designated classification criteria given in Chapter 173-201A WAC; therefore, the Department will use the designated classification criteria (Class A) for this water body in the proposed permit.

CRITICAL CONDITIONS

Surface water quality-based limits are derived for the waterbody's critical condition, which represents the receiving water and waste discharge condition with the highest potential for adverse impact on the aquatic biota, human health, and existing or characteristic waterbody uses.

MIXING ZONES

The water quality standards allow the Department of Ecology to authorize mixing zones around a point of discharge in establishing surface water quality-based effluent limits. Both "acute" and "chronic" mixing zones may be authorized for pollutants that can have a toxic effect on the aquatic environment near the point of discharge. The concentration of pollutants at the boundary of these mixing zones may not exceed the numerical criteria for that type of zone. Mixing zones can only be authorized for discharges that are receiving all known, available, and reasonable methods of prevention, control and treatment (AKART) and in accordance with other mixing zone requirements of WAC 173-201A-100.

The National Toxics Rule (EPA, 1992) allows the chronic mixing zone to be used to meet human health criteria.

DESCRIPTION OF THE RECEIVING WATER

The facility effluent discharges to an unnamed stream (tributary to Port Susan) which is designated as a Class A Fresh Water in the vicinity of the outfall.

Water quality of this class shall meet or exceed the requirements for all or substantially all uses which are:

> water supply (domestic, industrial, agricultural); stock watering; fish migration; fish rearing, spawning and harvesting; wildlife habitat; primary contact recreation; sport fishing; boating and aesthetic enjoyment; commerce and navigation.

SURFACE WATER QUALITY CRITERIA

Applicable criteria are defined in Chapter 173-201A WAC for aquatic biota. In addition, U.S. EPA has promulgated human health criteria for toxic pollutants (EPA 1992). Criteria for this receiving water (unnamed stream tributary to Port Susan) are summarized below:

Surface Water Quality criteria for Class A Fresh Waters:

Parameter	Water Quality Criteria
Fecal Coliforms	100 organisms/100 mL maximum geometric mean
Dissolved Oxygen	8 mg/L minimum
Temperature	18 degrees Celsius maximum
pH	6.5 to 8.5 standard units
Turbidity	less than 5 NTUs above background
Toxics	No toxics in toxic amounts

The Permittee conducted a one-year monitoring study of the receiving water from February 1996 to January 1997. Stations upstream and downstream of the effluent discharge location were included in this monitoring study. The treatment plant (aerated lagoon) effluent was also monitored for the same parameters during this time period. In addition, water quality monitoring in an irrigation drainage ditch west of the lagoon was conducted. The monitoring results were submitted to the Department in June 1997, in a report *"Receiving Water Study and Analysis of Effluent Criteria for Future NPDES Permitting."*

It should be noted that the study was conducted before the wetlands treatment system was constructed. The treatment facility is producing much better quality effluent since the wetlands treatment became operational in August 2003.

During the existing permit development in 1998, it was determined that the width of the receiving stream and stream flow were insufficient to allow a mixing zone for the discharge. This was based on the monitoring data presented in the report. Therefore, a mixing zone in the receiving stream was not granted, and the final effluent limitations in the existing permit were based on the Permittee having to comply with the water quality standards at the end of the outfall pipe prior to discharge to the receiving stream. The proposed permit is developed with the same criteria.

It should be noted that the Department staff conducted a TMDL study in the Stillaguamish River basin, and the receiving waterbody (Unnamed Creek or Warm Beach Creek) for this facility's discharge was part of this study. The study is published in a report titled *Stillaguamish River Watershed Fecal Coliform, Dissolved Oxygen, pH, Mercury, and Arsenic Total Maximum Daily Load Study* (Ecology Publication Number 04-03-017). The data collected during this study is published in a report titled *Data Summary: Stillaguamish River Watershed Fecal Coliform, Dissolved Oxygen, pH, Mercury, and Arsenic Total Maximum Daily Load Study* (Ecology Publication Number 04-03-037).

As stated in the "Dissolved Oxygen" section of the TMDL study report, loading capacity analysis were conducted for nine reaches representing five tributaries in the Stillaguamish River basin. Minimum DO concentrations were set to improve water quality in the tributaries, but also to acknowledge that in some cases, natural DO conditions may be below the 8 mg/L Class A criterion. Wasteload allocations for point sources with NPDES permits, and load allocations for nonpoint sources were calculated for five tributaries, where appropriate.

Table 37 of the report shows *Estimates of the BOD_5 Loading Capacities, Load Allocations (LA), and Wasteload Allocations (WLA) for six sites in the Stillaguamish River Basin to meet the TMDL Dissolved Oxygen Target.* The table shows wasteload allocation for BOD_5 as zero pounds per day for the Warm Beach WWTP.

The report further states that the Warm Beach facility has recently completed an upgrade. If the plant remains in Warm Beach Creek, its effluent characteristics must meet water quality criteria and show no measurable effect downstream in the dike pond. During some periods of the summer, Warm Beach Creek has no flow upstream of the Warm Beach Conference Center WWTP, so the effluent is not diluted. In such cases Ecology Policy states that the water quality standard must be met at the end of the outfall (Bailey, 2002). When Warm Beach Creek is flowing, it does not meet the Class A criterion. Since no further degradation is permitted downstream, the BOD wasteload allocation must be zero, unless the facility can show that its effluent BOD and DO concentrations do not cause further degradation.

The TMDL study is under review for approval by the US Environmental Protection Agency (EPA). Once approved by EPA, the Department will allocate the wasteload to various point and nonpoint sources. Based on the study results, the BOD wasteload allocation for the Warm Beach facility would be zero, unless the Permittee can show that the facility effluent BOD and DO concentrations will not cause further degradation in Warm Beach Creek. The Permittee will satisfy this requirement by relocating the facility discharge to a different waterbody – surface water or ground water.

CONSIDERATION OF SURFACE WATER QUALITY-BASED LIMITS FOR NUMERIC CRITERIA

Pollutant concentrations in the proposed discharge exceed water quality criteria with technology-based controls which the Department has determined to be AKART. The water quality standards allow the use of mixing zones for establishing surface water quality-based effluent limits for discharges that would otherwise exceed the water quality criteria for aquatic life. However, as stated above, a mixing zone in the receiving stream cannot be granted, and the effluent limits in the proposed permit are based on compliance with the water quality standards at the end of the outfall pipe prior to discharge to the stream.

Pollutants in an effluent may affect the aquatic environment near the point of discharge (near-field) or at a considerable distance from the point of discharge (far-field). Toxic pollutants, for example, are near-field pollutants—their adverse effects diminish rapidly with mixing in the receiving water. Conversely, a pollutant such as BOD is a far-field pollutant whose adverse effect occurs away from the discharge even after dilution has occurred. Thus, the method of calculating water quality-based effluent limits varies with the point at which the pollutant has its maximum effect.

The impacts of dissolved oxygen deficiency, temperature, pH, fecal coliform, chlorine and ammonia, were determined as shown below.

BOD--The environmental impacts from BOD are generally measured in terms of 5-day biochemical oxygen demand (BOD_5). Based on the monitoring data presented in the receiving water study report submitted by the Permittee, the receiving stream travel time from the discharge point to the impoundment behind the Port Susan dike is estimated to be three hours under average velocity conditions. The impact of effluent BOD_5 to the water quality of the receiving stream or the impoundment behind the Port Susan dike is unknown. Based on the Stillaguamish River basin TMDL study conducted by the Department, the wasteload allocation for BOD_5 for the Warm Beach WWTP is zero pounds per day. The Permittee will satisfy this requirement by relocating the facility discharge to a different waterbody – surface water or ground water. Until then, technology-based effluent limitations for BOD are proposed in the permit.

DO--In order to maintain dissolved oxygen (DO) levels in the stream at Class A standards, the proposed final effluent limit for DO is 8.0 mg/L minimum.

Temperature--The impact of the discharge on receiving stream temperature was measured during the receiving water study conducted by the Permittee. Temperature in the receiving stream was not significantly impacted by the discharge. The highest stream temperature observed during the study was 14^{o} C, well within the water quality standards for Class A fresh water. Therefore, no effluent limitation for temperature is placed in the proposed permit.

pH--The impact of the discharge on receiving stream pH was measured during the receiving water study conducted by the Permittee. The pH in the receiving stream was not significantly impacted by the discharge. During the study, pH in the stream stayed within the water quality standards for Class A fresh water. Therefore, technology-based effluent limitations for pH are proposed in the permit.

Fecal Coliform--The proposed effluent limits for fecal coliform is based on the Class A water quality criteria, which is monthly geometric mean of 100 colonies/100 mL with no more than 10 percent of all samples obtained for calculating the monthly geometric mean value exceeding 200 colonies/100 mL.

Toxic Pollutants--Federal regulations (40 CFR 122.44) require NPDES permits to contain effluent limits for toxic chemicals in an effluent whenever there is a reasonable potential for those chemicals to exceed the surface water quality criteria. This process occurs concurrently with the derivation of technology-based effluent limits. Facilities with technology-based effluent limits defined in regulation are not exempted from meeting the water quality standards for surface waters or from having surface water quality-based effluent limits.

The toxics that were determined to be present in the discharge are chlorine and ammonia. Since a dilution zone is not allowed for the facility effluent, the Permittee must comply with the water quality standards at the end of the outfall pipe prior to discharge to the receiving stream.

During the existing permit development in 1998, the final ammonia and chlorine limits for the facility effluent were developed based on the fresh water criteria in WAC 173-201A. The data obtained during the water quality monitoring study were also taken into consideration in developing the final ammonia limits. With the assumption that the ambient conditions have not changed significantly, the effluent limits derived for ammonia and chlorine are same as the existing effluent limits. These limits are as follows:

Parameter	**Permit Limits**	
	Monthly Average	**Daily Maximum**
Total Residual Chlorine	8 µg/L	19 µg/L
Total Ammonia as NH_3-N	1.8 mg/L	3.5 mg/L

The final chlorine limits shown in the table above are placed in Condition S1A of the proposed permit. However, as explained below, performance-based (interim) ammonia limits are proposed in this permit.

PERFORMANCE-BASED (INTERIM) EFFLUENT LIMITATIONS FOR AMMONIA

The proposed interim effluent limit (15 mg/L daily maximum) for ammonia is specified in Condition S1A of the permit. Performance of wetlands treatment systems (such as the one at Warm Beach Camp) for nutrient removal tends to vary with ambient temperature and hence, with seasons. Wetlands treatment systems primarily depend on aquatic plants and microorganisms for nutrient uptake/conversion. The activity/productivity of aquatic plants and microorganisms decrease with decrease in ambient temperature and availability of sunlight. Therefore, the performance of wetlands treatment systems for nutrient removal is generally poor during cold weather months. Based on the monitoring data submitted by the Permittee, during the months of May 2003 through February 2005, the highest effluent ammonia concentration measured was 10.7 mg/L (maximum daily), and 9.3 mg/L (average monthly). The effluent ammonia limitations in the existing permit are 3.5 mg/L (maximum daily), and 1.8 mg/L (average monthly). Based on the monitoring data, it appears that the upgraded facility will not be able to consistently comply with the stringent effluent ammonia limits in the existing permit.

The Code of Federal regulations 40 CFR 122.62 (a)(16) allows setting performance-based limits which are higher than the limits placed in the previous permit, in cases where the discharger has installed treatment technology which was considered in setting effluent limitations, and the Permittee properly operated and maintained the facility but nevertheless was unable to achieve those effluent limitations. The maximum daily ammonia concentration measured in the facility effluent since the wetlands treatment system became operational was 10.7 mg/L. As stated earlier, performance of the wetlands treatment system is dependent on ambient temperature and availability of sunlight. Thus, reduced performance during the winter months is expected. Because of the lack of operational controls associated with the wetlands treatment system, it is not possible to predict with any degree of certainty, the future

performance of the wetlands treatment system with respect to ammonia reduction. However, based on the monitoring conducted by the Permittee thus far, it appears that the upgraded facility should be able to produce effluent with ammonia concentrations 15 mg/l or less. Therefore, a maximum daily (interim) limit of 15 mg/L for ammonia is proposed in the permit. No monthly average limit is proposed in the permit. It should be noted that the proposed limit is much lower than the ammonia concentrations observed in the facility effluent prior to the upgrade of the facility with the wetlands treatment system. It should also be noted that based on monitoring conducted thus far, the facility is expected to produce effluent with much lower ammonia concentrations most of the time. The interim ammonia limit is effective only until the facility outfall is relocated. As stated in footnote "e" of Condition S1A, the final effluent limitation for ammonia is 0 mg/L, since after the outfall relocation the effluent will no longer be discharging to the receiving waterbody identified on the cover page of the permit.

WHOLE EFFLUENT TOXICITY

The water quality standards for surface waters require that the effluent not cause toxic effects in the receiving waters. Many toxic pollutants cannot be detected by commonly available detection methods. However, toxicity can be measured directly by exposing living organisms to the wastewater in laboratory tests and measuring the response of the organisms. Toxicity tests measure the aggregate toxicity of the whole effluent, and therefore this approach is called whole effluent toxicity (WET) testing. Some WET tests measure acute toxicity and other WET tests measure chronic toxicity.

In accordance with WAC 173-205-040, the Permittee's effluent has been determined to contain toxic chemical - ammonia. The proposed permit would ordinarily contain requirements for whole effluent toxicity testing as authorized by RCW 90.48.520 and 40 CFR 122.44 and in accordance with procedures in Chapter 173-205 WAC. However, the Permittee will be improving pollution controls (outfall relocation) in order to meet other regulatory requirements. Since the mixing zones may be allowed in a different receiving surface waterbody where the outfall may be relocated, the results of an effluent characterization for toxicity at this time would not be accurate for the future discharge location. If the Permittee proposes to relocate the outfall to another body of surface water, the Permittee will be required to conduct WET testing prior to outfall relocation.

WAC 173-205-030(4) allows the Department to delay effluent characterization for WET for existing facilities that are under a compliance schedule in a permit to implement technology-based controls or to achieve compliance with surface water quality-based effluent limits. Based on the results of the WET testing to be conducted prior to outfall relocation (if the outfall is relocated to another surface waterbody), the WET testing requirements in the permit will be evaluated after the outfall relocation.

HUMAN HEALTH

Washington's water quality standards now include 91 numeric health-based criteria that must be considered in NPDES permits. These criteria were promulgated for the state by the U.S. EPA in its National Toxics Rule (Federal Register, Volume 57, No. 246, Tuesday, December 22, 1992).

The Department has determined that the applicant's discharge is unlikely to contain chemicals regulated for human health. The discharge will be reevaluated for impacts to human health at the next permit reissuance.

SEDIMENT QUALITY

The Department has promulgated aquatic sediment standards (Chapter 173-204 WAC) to protect aquatic biota and human health. These standards state that the Department may require Permittees to evaluate the potential for the discharge to cause a violation of applicable standards (WAC 173-204-400).

The Department has determined through a review of the discharger characteristics and effluent characteristics that this discharge has no reasonable potential to violate the sediment management standards.

GROUND WATER QUALITY LIMITATIONS

The Department has promulgated ground water quality standards (Chapter 173-200 WAC) to protect uses of ground water. Permits issued by the Department shall be conditioned in such a manner so as not to allow violations of those standards (WAC 173-200-100).

This Permittee has no discharge to ground and therefore no limitations are required based on potential effects to ground water.

COMPARISON OF PROPOSED EFFLUENT LIMITS WITH THE EXISTING EFFLUENT LIMITS

Parameter	Existing Effluent Limits	Proposed Effluent Limits
BOD_5 (average monthly)	30 mg/L	30 mg/L
TSS (average monthly)	75 mg/L	75 mg/L
Fecal Coliform (average monthly)	100/100 mL	100/100 mL
pH (standard units)	Daily minimum equal to or greater than 6, and daily maximum equal to or greater than 9.	
Total Residual Chlorine (maximum daily)	19 µg/L	19 µg/L
Total Ammonia (NH3-N) (maximum daily)	3.5 mg/L	15 mg/L (interim limits until the outfall relocation)
DO (minimum daily)	8.0 mg/L	8.0 mg/L

MONITORING REQUIREMENTS

Monitoring, recording, and reporting are required (WAC 173-220-210 and 40 CFR 122.41) to verify that the treatment process is functioning correctly and the effluent limitations are being achieved.

The monitoring schedule is detailed in the proposed permit under Condition S2. Specified monitoring frequencies take into account the quantity and variability of discharge, the treatment method, past compliance, significance of pollutants, and cost of monitoring. The required monitoring frequency is consistent with agency guidance given in the current version of Ecology's *Permit Writer's Manual* (July 1994) for (i) all treatment plants with less than 0.1 MGD Average Design Flow and (ii) sewage lagoons with less than 0.5 MGD Average Design Flow.

LAB ACCREDITATION

With the exception of certain parameters, the permit requires all monitoring data to be prepared by a laboratory registered or accredited under the provisions of Chapter 173-50 WAC, *Accreditation of Environmental Laboratories.*

OTHER PERMIT CONDITIONS

REPORTING AND RECORDKEEPING

The conditions of S3 are based on the authority to specify any appropriate reporting and recordkeeping requirements to prevent and control waste discharges (WAC 173-220-210).

PREVENTION OF FACILITY OVERLOADING

Overloading of the treatment plant is a violation of the terms and conditions of the permit. To prevent this from occurring, RCW 90.48.110 and WAC 173-220-150 require the Permittee to take the actions detailed in proposed permit requirement S4 to plan expansions or modifications before existing capacity is reached and to report and correct conditions that could result in new or increased discharges of pollutants. Condition S4 restricts the amount of flow.

OPERATION AND MAINTENANCE (O&M)

The proposed permit contains Condition S5 as authorized under RCW 90.48.110, WAC 173-220-150, WAC 173-230, and WAC 173-240-080. It is included to ensure proper operation and regular maintenance of equipment, and to ensure that adequate safeguards are taken so that constructed facilities are used to their optimum potential in terms of pollutant capture and treatment.

RESIDUAL SOLIDS HANDLING

To prevent water quality problems, the Permittee is required in permit Condition S7 to store and handle all residual solids (grit, screenings, scum, sludge, and other solid waste) in accordance with the requirements of RCW 90.48.080 and state water quality standards.

The final use and disposal of sewage sludge from this facility is regulated by U.S. EPA under 40 CFR 503. The disposal of other solid waste is under the jurisdiction of the Snohomish County Health Department.

PRETREATMENT

All of the wastewater flow to the facility is domestic in nature. Therefore, the pretreatment Condition S8 in the permit is a standard condition derived from the Federal Regulation 40 CFR 403.5.

GENERAL CONDITIONS

General Conditions are based directly on state and federal law and regulations and have been standardized for all individual municipal NPDES permits issued by the Department.

PERMIT ISSUANCE PROCEDURES

PERMIT MODIFICATIONS

The Department may modify this permit to impose numerical limitations, if necessary, to meet water quality standards, sediment quality standards, or ground water standards, based on new information obtained from sources such as inspections, effluent monitoring, outfall studies, and effluent mixing studies.

The Department may also modify this permit as a result of new or amended state or federal regulations.

RECOMMENDATION FOR PERMIT ISSUANCE

This proposed permit meets all statutory requirements for authorizing a wastewater discharge, including those limitations and conditions believed necessary to protect human health, aquatic life, and the beneficial uses of waters of the state of Washington. The permit requires relocation of the outfall by September 30, 2006. Depending on the new discharge location, this permit may be revised, or revoked and replaced with a new permit. In addition, the compliance schedule for the outfall relocation may be extended for delays caused by circumstances beyond the Permittee's control. Therefore, the Department proposes that this permit be issued for the full allowable five (5)-year period.

REFERENCES FOR TEXT AND APPENDICES

Environmental Protection Agency (EPA)

1991. Technical Support Document for Water Quality-based Toxics Control. EPA/505/2-90-001.

Washington State Department of Ecology

1994. Permit Writer's Manual. Publication Number 92-109

2004. Stillaguamish River Watershed Fecal Coliform, Dissolved oxygen, pH, Mercury, and Arsenic Total Maximum Daily Load Study. Publication No. 04-03-017

2004. Data Summary: Stillaguamish River Watershed Fecal Coliform, Dissolved Oxygen, pH, Mercury, and Arsenic Total Maximum Daily Load Study. Publication No. 04-03-037

Warm Beach Christian Camps and Conference center

1997. Receiving Water Study and Analysis of Effluent Criteria for Future NPDES Permitting, Hammond, Collier & Wade-Livingstone Associates, Inc.

1998. Wastewater Treatment Plant Engineering Report, H. R. Esvelt Engineering

2000. Addendum to Wastewater Treatment Plant Engineering Report, H. R. Esvelt Engineering

2001. Wastewater Treatment Plant Upgrade and Expansion Plans and Specifications, H.R. Esvelt Engineering

APPENDIX A—PUBLIC INVOLVEMENT INFORMATION

The Department has tentatively determined to reissue a permit to the applicant listed on page one of this fact sheet. The permit contains conditions and effluent limitations which are described in the rest of this fact sheet.

Public Notice of Application (PNOA) was published on September 3 and 10, 2002, in *The Everett Herald* to inform the public that an application had been submitted and to invite comment on the reissuance of this permit.

The Department published a Public Notice of Draft (PNOD) on April 29, 2005 in *The Everett Herald* to inform the public that a draft permit and fact sheet were available for review. Interested persons were invited to submit written comments regarding the draft permit. The draft permit, fact sheet, and related documents were available for inspection and copying between the hours of 8:00 a.m. and 5:00 p.m. weekdays, by appointment, at the regional office listed below. Written comments were mailed to:

Water Quality Permit Coordinator
Department of Ecology
Northwest Regional Office
3190 - 160th Avenue SE
Bellevue, WA 98008-5452

Any interested party may comment on the draft permit or request a public hearing on this draft permit within the thirty (30)-day comment period to the address above. The request for a hearing shall indicate the interest of the party and the reasons why the hearing is warranted. The Department will hold a hearing if it determines there is a significant public interest in the draft permit (WAC 173-220-090). Public notice regarding any hearing will be circulated at least thirty (30) days in advance of the hearing. People expressing an interest in this permit will be mailed an individual notice of hearing (WAC 173-220-100).

Comments should reference specific text followed by proposed modification or concern when possible. Comments may address technical issues, accuracy and completeness of information, the scope of the facility's proposed coverage, adequacy of environmental protection, permit conditions, or any other concern that would result from issuance of this permit.

The Department will consider all comments received within thirty (30) days from the date of public notice of draft indicated above, in formulating a final determination to issue, revise, or deny the permit. The Department's response to all significant comments is available upon request and will be mailed directly to people expressing an interest in this permit. Further information may be obtained from the Department by telephone (425) 649-7201, or by writing to the address listed above.

APPENDIX B—GLOSSARY

Acute Toxicity--The lethal effect of a pollutant on an organism that occurs within a short period of time, usually 48 to 96 hours.

AKART--An acronym for "all known, available, and reasonable methods of prevention, control, and treatment."

Ambient Water Quality--The existing environmental condition of the water in a receiving water body.

Ammonia--Ammonia is produced by the breakdown of nitrogenous materials in waste water. Ammonia is toxic to aquatic organisms, exerts an oxygen demand, and contributes to eutrophication. It also increases the amount of chlorine needed to disinfect waste water.

Average Monthly Discharge Limitation--The highest allowable average of daily discharges over a calendar month, calculated as the sum of all daily discharges measured during a calendar month divided by the number of daily discharges measured during that month (except in the case of fecal coliform). The daily discharge is calculated as the average measurement of the pollutant over the day.

Average Weekly Discharge Limitation--The highest allowable average of daily discharges over a calendar week, calculated as the sum of all daily discharges measured during a calendar week divided by the number of daily discharges measured during that week. The daily discharge is calculated as the average measurement of the pollutant over the day.

Best Management Practices (BMPs)--Schedules of activities, prohibitions of practices, maintenance procedures, and other physical, structural and/or managerial practices to prevent or reduce the pollution of waters of the state. BMPs include treatment systems, operating procedures, and practices to control: plant site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage. BMPs may be further categorized as operational, source control, erosion and sediment control, and treatment BMPs.

BOD_5--Determining the Biochemical Oxygen Demand of an effluent is an indirect way of measuring the quantity of organic material present in an effluent that is utilized by bacteria. The BOD_5 is used in modeling to measure the reduction of dissolved oxygen in receiving water after effluent is discharged. Stress caused by reduced dissolved oxygen levels makes organisms less competitive and less able to sustain their species in the aquatic environment. Although BOD is not a specific compound, it is defined as a conventional pollutant under the federal Clean Water Act.

Bypass--The intentional diversion of waste streams from any portion of a treatment facility.

$CBOD_5$--The quantity of oxygen utilized by a mixed population of microorganisms acting on the nutrients in the sample in an aerobic oxidation for five days at a controlled temperature of 20 degrees Celsius, with an inhibitory agent added to prevent the oxidation of nitrogen compounds. The method for determining $CBOD_5$ is given in 40 CFR Part 136.

Chlorine--Chlorine is used to disinfect wastewaters of pathogens harmful to human health. It is also extremely toxic to aquatic life.

Chronic Toxicity--The effect of a pollutant on an organism over a relatively long time, often 1/10 of an organism's lifespan or more. Chronic toxicity can measure survival, reproduction or growth rates, or other parameters to measure the toxic effects of a compound or combination of compounds.

Clean Water Act (CWA)--The Federal Water Pollution Control Act enacted by Public Law 92-500, as amended by Public Laws 95-217, 95-576, 96-483, 97-117; USC 1251 et seq.

Combined Sewer Overflow (CSO)--The event during which excess combined sewage flow caused by inflow is discharged from a combined sewer, rather than conveyed to the sewage treatment plant because either the capacity of the treatment plant or the combined sewer is exceeded.

Compliance Inspection - Without Sampling--A site visit for the purpose of determining the compliance of a facility with the terms and conditions of its permit or with applicable statutes and regulations.

Compliance Inspection - With Sampling--A site visit to accomplish the purpose of a Compliance Inspection - Without Sampling and as a minimum, sampling and analysis for all parameters with limits in the permit to ascertain compliance with those limits; and, for municipal facilities, sampling of influent to ascertain compliance with the percent removal requirement. Additional sampling may be conducted.

Composite Sample--A mixture of grab samples collected at the same sampling point at different times, formed either by continuous sampling or by mixing a minimum of four discrete samples. May be "time-composite" (collected at constant time intervals) or "flow-proportional" (collected either as a constant sample volume at time intervals proportional to stream flow, or collected by increasing the volume of each aliquot as the flow increased while maintaining a constant time interval between the aliquots).

Construction Activity--Clearing, grading, excavation, and any other activity which disturbs the surface of the land. Such activities may include road building; construction of residential houses, office buildings, or industrial buildings; and demolition activity.

Continuous Monitoring--Uninterrupted, unless otherwise noted in the permit.

Critical Condition--The time during which the combination of receiving water and waste discharge conditions have the highest potential for causing toxicity in the receiving water environment. This situation usually occurs when the flow within a water body is low, thus, its ability to dilute effluent is reduced.

Dilution Factor--A measure of the amount of mixing of effluent and receiving water that occurs at the boundary of the mixing zone. Expressed as the inverse of the effluent fraction e.g., a dilution factor of 10 means the effluent comprises 10% by volume and the receiving water 90%.

Engineering Report--A document which thoroughly examines the engineering and administrative aspects of a particular domestic or industrial wastewater facility. The report shall contain the appropriate information required in WAC 173-240-060 or 173-240-130.

Fecal Coliform Bacteria--Fecal coliform bacteria are used as indicators of pathogenic bacteria in the effluent that are harmful to humans. Pathogenic bacteria in wastewater discharges are controlled by disinfecting the wastewater. The presence of high numbers of fecal coliform bacteria in a water body can indicate the recent release of untreated wastewater and/or the presence of animal feces.

Grab Sample--A single sample or measurement taken at a specific time or over as short period of time as is feasible.

Industrial User--A discharger of wastewater to the sanitary sewer which is not sanitary wastewater or is not equivalent to sanitary wastewater in character.

Industrial Wastewater--Water or liquid-carried waste from industrial or commercial processes, as distinct from domestic wastewater. These wastes may result from any process or activity of industry, manufacture, trade or business; from the development of any natural resource; or from animal operations such as feed lots, poultry houses, or dairies. The term includes contaminated storm water and, also, leachate from solid waste facilities.

Infiltration and Inflow (I/I)--"Infiltration" means the addition of ground water into a sewer through joints, the sewer pipe material, cracks, and other defects. "Inflow" means the addition of precipitation-caused drainage from roof drains, yard drains, basement drains, street catch basins, etc., into a sewer.

Interference--A discharge which, alone or in conjunction with a discharge or discharges from other sources, both:

Inhibits or disrupts the POTW, its treatment processes or operations, or its sludge processes, use or disposal; and

Therefore is a cause of a violation of any requirement of the POTW's NPDES permit (including an increase in the magnitude or duration of a violation) or of the prevention of sewage sludge use or disposal in compliance with the following statutory provisions and regulations or permits issued thereunder (or more stringent state or local regulations): Section 405 of the Clean Water Act, the Solid Waste Disposal Act (SWDA) (including Title II, more commonly referred to as the Resource Conservation and Recovery Act (RCRA), and including State regulations contained in any State sludge management plan prepared pursuant to Subtitle D of the SWDA), sludge regulations appearing in 40 CFR Part 507, the Clean Air Act, the Toxic Substances Control Act, and the Marine Protection, Research and Sanctuaries Act.

Major Facility--A facility discharging to surface water with an EPA rating score of > 80 points based on such factors as flow volume, toxic pollutant potential, and public health impact.

Maximum Daily Discharge Limitation--The highest allowable daily discharge of a pollutant measured during a calendar day or any 24-hour period that reasonably represents the calendar day for purposes of sampling. The daily discharge is calculated as the average measurement of the pollutant over the day.

Method Detection Level (MDL)--The minimum concentration of a substance that can be measured and reported with 99% confidence that the analyte concentration is above zero and is determined from analysis of a sample in a given matrix containing the analyte.

Minor Facility--A facility discharging to surface water with an EPA rating score of < 80 points based on such factors as flow volume, toxic pollutant potential, and public health impact.

Mixing Zone--A volume that surrounds an effluent discharge within which water quality criteria may be exceeded. The area of the authorized mixing zone is specified in a facility's permit and follows procedures outlined in State regulations (Chapter 173-201A WAC).

National Pollutant Discharge Elimination System (NPDES)--The NPDES (Section 402 of the Clean Water Act) is the federal wastewater permitting system for discharges to navigable waters of the United States. Many states, including the state of Washington, have been delegated the authority to issue these permits. NPDES permits issued by Washington State permit writers are joint NPDES/State permits issued under both state and federal laws.

Pass-through--A discharge which exits the POTW into waters of the state in quantities or concentrations which, alone or in conjunction with a discharge or discharges from other sources, is a cause of a violation of any requirement of the POTW's NPDES permit (including an increase in the magnitude or duration of a violation), or which is a cause of a violation of state water quality standards.

pH--The pH of a liquid measures its acidity or alkalinity. A pH of 7 is defined as neutral, and large variations above or below this value are considered harmful to most aquatic life.

Potential Significant Industrial User--A potential significant industrial user is defined as an Industrial User which does not meet the criteria for a Significant Industrial User, but which discharges wastewater meeting one or more of the following criteria:

a. Exceeds 0.5 % of treatment plant design capacity criteria and discharges <25,000 gallons per day; or

b. Is a member of a group of similar industrial users which, taken together, have the potential to cause pass-through or interference at the POTW (e.g. facilities which develop photographic film or paper, and car washes).

The Department may determine that a discharger initially classified as a potential significant industrial user should be managed as a significant industrial user.

Quantitation Level (QL)--A calculated value five times the MDL (method detection level).

Significant Industrial User (SIU)--

1) All industrial users subject to Categorical Pretreatment Standards under 40 CFR 403.6 and 40 CFR Chapter I, Subchapter N and;

2) Any other industrial user that: discharges an average of 25,000 gallons per day or more of process wastewater to the POTW (excluding sanitary, noncontact cooling, and boiler blow-down wastewater); contributes a process wastestream that makes up 5 percent or more of the average dry weather hydraulic or organic capacity of the POTW treatment plant; or is designated as such by the Control Authority* on the basis that the industrial user has a reasonable potential for adversely affecting the POTW's operation or for violating any pretreatment standard or requirement [in accordance with 40 CFR 403.8(f)(6)].

Upon finding that the industrial user meeting the criteria in paragraph 2, above, has no reasonable potential for adversely affecting the POTW's operation or for violating any pretreatment standard or requirement, the Control Authority* may at any time, on its own initiative or in response to a petition received from an industrial user or POTW, and in accordance with 40 CFR 403.8(f)(6), determine that such industrial user is not a significant industrial user.

*The term "Control Authority" refers to the Washington State Department of Ecology in the case of nondelegated POTWs or to the POTW in the case of delegated POTWs.

State Waters--Lakes, rivers, ponds, streams, inland waters, underground waters, salt waters, wetlands, and all other surface waters and watercourses within the jurisdiction of the state of Washington.

Stormwater--That portion of precipitation that does not naturally percolate into the ground or evaporate, but flows via overland flow, interflow, pipes, and other features of a storm water drainage system into a defined surface water body, or a constructed infiltration facility.

Technology-based Effluent Limit--A permit limit that is based on the ability of a treatment method to reduce the pollutant.

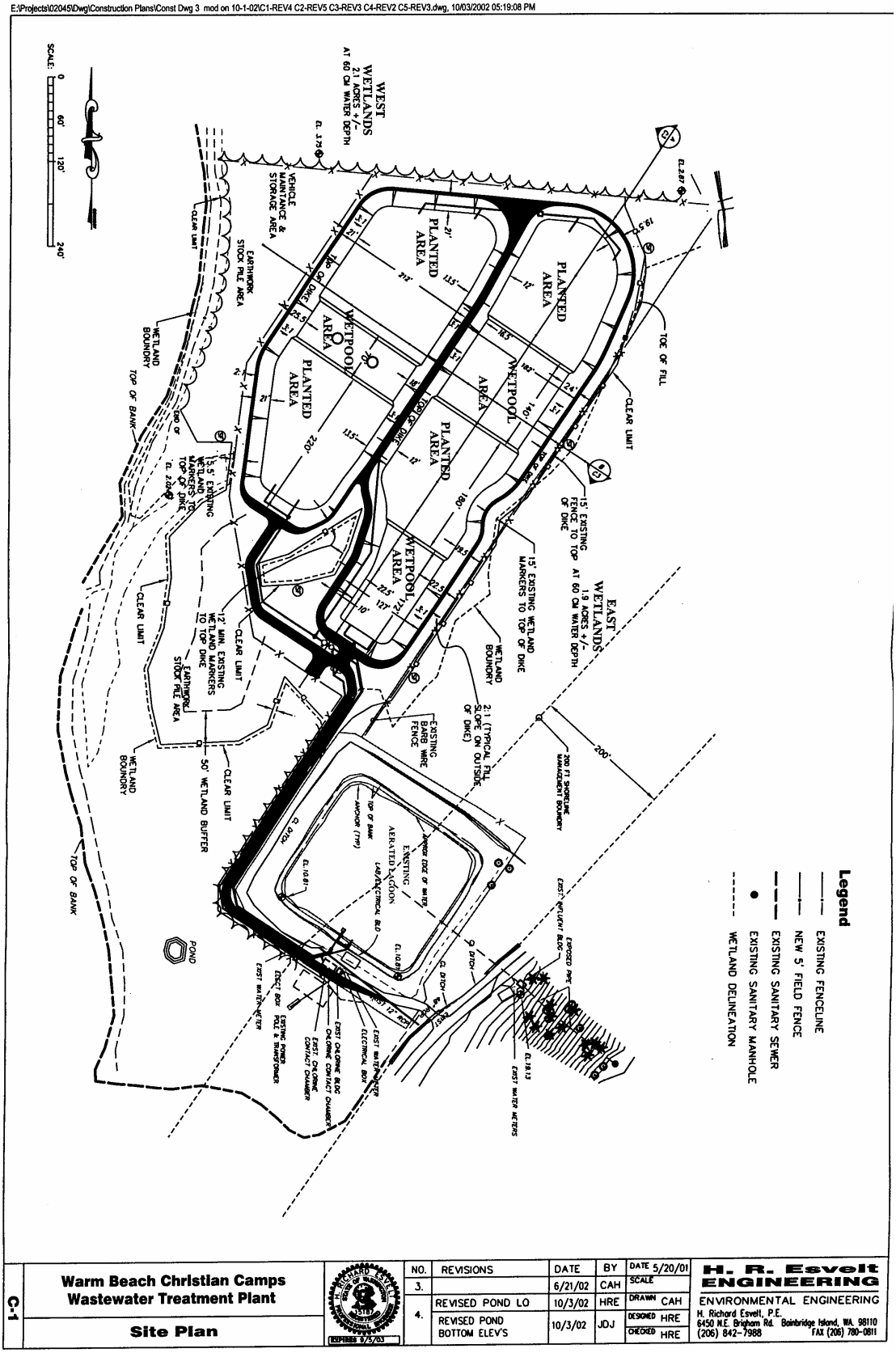
Total Maximum Daily Load (TMDL)-- Required under the Clean Water Act, this analysis determines the maximum amount of a pollutant that can be received by a water body and still meet state water quality standards. The TMDL also allocates the allowed loads among point and nonpoint sources of the pollutant and requires that pollutant inputs be reduced to meet the load and wasteload allocations.

Total Suspended Solids (TSS)--Total suspended solids are the particulate materials in an effluent. Large quantities of TSS discharged to a receiving water may result in solids accumulation. Apart from any toxic effects attributable to substances leached out by water, suspended solids may kill fish, shellfish, and other aquatic organisms by causing abrasive injuries and by clogging the gills and respiratory passages of various aquatic fauna. Indirectly, suspended solids can screen out light and can promote and maintain the development of noxious conditions through oxygen depletion.

Upset--An exceptional incident in which there is unintentional and temporary noncompliance with technology-based permit effluent limitations because of factors beyond the reasonable control of the Permittee. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, lack of preventative maintenance, or careless or improper operation.

Water Quality-based Effluent Limit--A limit on the concentration or mass of an effluent parameter that is intended to prevent the concentration of that parameter from exceeding its water quality criterion after it is discharged into a receiving water.

APPENDIX C—TREATMENT FACILITY LAYOUT AND OUTFALL LOCATION



APPENDIX D—RESPONSE TO COMMENTS

No comments were received during the publication of a notice describing the proposed renewal of this permit.